

ABSTRACT

In one embodiment, a video encoder encodes digital video using motion segmentation. According to one embodiment, motion segmentation is performed using multiple frames. The motion segmentation may operate by determining multiple classification hypotheses and by re-classifying poorly classified regions according to the multi-frame hypothesis tracking algorithm. This involves determining a similarity measure for each hypothesis class, and then assigning a classification to the region with the hypothesis class that is most similar or consistent with past or future data. This hypothesis tracking algorithm for re-classification can handle inherent problems like occlusion and ambiguous motion classification, that plague standard methods. In another embodiment, the motion segmentation algorithm may be integrated into a larger video encoding system. The system may incorporate motion estimation, motion classification, identification and selection of poor blocks, and re-classification of poor blocks using the multi-frame hypothesis tracking algorithm.